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AGRICULTURAL MEMORANDUM NO 466

Expectancy of Heavy Winter Rainfall - WEST MIDLANDS

L P Smith

Long-term records of 29 rainfall stations in the West Midlands were examined to determine the probable heaviest falls in 1 year, 2 years, 10 years over 1 and 5 days. Rainfall in millimetres. Period - November to April.

Results

County	No of Stations	Mean Annual Rainfall	Heaviest 1 day falls in 1 year	2 years	10 years	Heaviest 5 day falls in 1 year	2 years	10 years
Cheshire	6	849	21.5	26.3	35.8	43.2	51.3	66.2
Shropshire	5	766	20.2	24.6	33.2	42.4	48.4	62.0
Stafford	11	751	19.6	23.9	33.9	39.6	46.5	60.5
Derby	7	808	22.6	27.1	36.3	43.6	52.4	67.3

Combining these counties and re-analysing:

Rainfall Range	No of Stations	Mean Annual Rainfall	Heaviest 1 day falls in 1 year	2 years	10 years	Heaviest 5 day falls in 1 year	2 years	10 years
600-680	6	657	18.3	22.2	30.5	35.7	41.0	52.8
680-760	8	726	19.4	23.7	33.0	38.5	46.0	59.4
760-840	7	803	21.1	25.6	35.9	42.7	50.0	65.4
840-920	5	875	21.6	26.8	35.8	44.0	53.4	67.8
over 920	3	1031	27.3	32.7	43.7	56.7	66.7	85.0

formulae

1 day	1 year	1.90 + 0.024R
	2 years	3.28 + 0.028R
	10 years	7.95 + 0.034R
5 days	1 year	0.055R - 1.49
	2 years	0.067R - 3.41
	10 years	0.082R - 1.03

These figures can be smoothed for the area as a whole; county corrections can be used to allow for regional differences:

Average Annual Rainfall	Heaviest 1 day fall			Heaviest 5 day fall		
	1 year	2 years	10 years	1 year	2 years	10 years
600	16.3	20.1	28.4	31.5	36.8	48.2
650	17.5	21.5	30.1	34.3	40.2	52.3
700	18.7	22.9	31.8	37.0	43.5	56.4
750	19.9	24.3	33.5	39.8	46.9	60.5
800	21.1	25.7	35.2	42.5	50.2	64.6
850	22.3	27.1	36.9	45.3	53.6	68.7
900	23.5	28.5	38.6	48.0	56.9	72.8
950	24.7	29.9	40.3	50.7	60.3	76.9
1000	25.9	31.3	42.0	53.5	63.7	81.0
County Corrections						
Cheshire	-0.8	-0.7	-1.0	-2.0	-2.2	-2.4
Shropshire	-0.1	-0.1	-0.8	+1.8	+0.5	+0.2
Stafford	-0.3	-0.4	+0.4	-0.2	-0.4	-0.1
Derby	+1.3	+1.2	+0.9	+0.7	+1.7	+2.1

The accuracy of the corrections is limited by the number of stations in the county groups.

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell